

AMENDMENTS TO THE CLAIMS

The claims in this listing will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A laser scanning device, comprising:

a semiconductor laser that emits a laser beam;

a laser power detector that detects a laser beam power of said semiconductor laser;

a reference voltage generator that generates a reference voltage for controlling the laser beam power of said semiconductor laser in accordance with a laser power control signal provided from an external device;

a laser driver that compares the reference voltage generated by said reference voltage generator and the laser beam power detected by said laser power detector to control a driving current supplied to said semiconductor laser for emitting the laser beam; and

an abnormal condition detector that detects, prior to emission of the laser beam, the laser power control signal received by said reference voltage generator and prevents inhibits said laser driver from operating emitting the laser beam when the laser power control signal differs from a predetermined signal value, and that permits said laser driver to emit the laser beam when the laser power control signal is the same as the predetermined value.

2. (Original) The laser scanning device according to claim 1, wherein said laser driver has a manually operable adjuster for adjusting the driving current of said semiconductor laser so as to correspond to the laser power control signal.

3. (Original) The laser scanning device according to claim 1,

wherein an input terminal of said reference voltage generator is kept at a first voltage level when no laser power control signal is provided thereto, and

wherein said abnormal condition detector outputs a laser driver disable signal to said laser driver to stop operation thereof when said input terminal remains at the first voltage level and the laser power control signal inputted thereto has a second voltage level different from the first voltage level.

4. (Original) The laser scanning device according to claim 3, wherein the first voltage level is a high voltage and the second voltage level is a low voltage lower than the first voltage level.

5. (Original) The laser scanning device according to claim 3,

wherein said reference voltage generator has a plurality of input terminals, each of said plurality of input terminals being kept at a first voltage level when no laser power control signal is provided thereto, and

wherein said abnormal condition detector outputs a laser driver disable signal to said laser driver to stop operation thereof when at least one of said input terminals remains at the first voltage level and the laser power control signal inputted thereto has a second voltage level different from the first voltage level.

6. (Original) The laser scanning device according to claim 5, wherein the laser power control signal is a parallel digital signal.

7. (Original) The laser scanning device according to claim 6,

wherein said abnormal condition detector includes an abnormal condition signal generator that generates an abnormal condition signal when at least one of said input

terminals remains at the first voltage level and the laser power control signal inputted thereto has the second voltage level, and a laser driver controller that outputs the laser driver disable signal to said laser driver when said abnormal condition signal generator outputs the abnormal condition signal.

8. (Previously Presented) The laser scanning device according to claim 7, wherein said abnormal condition signal generator includes an NAND gate having a number of inputs that is not less than a number of said input terminals of said reference voltage generator.

9. (Previously Presented) The laser scanning device according to claim 7, wherein said abnormal condition signal generator includes a plurality of open collector inverters,

wherein inputs of said open collector inverters are connected with respective ones of said input terminals, and

wherein outputs of said open collector inverters are connected with each other to form a single output.

10. (Original) The laser scanning device according to claim 7, wherein said laser driver controller is a flip flop that changes a state of an output thereof to generate the laser driver disable signal.

11. (Currently Amended) A laser scanning device, comprising:  
a laser source that emits a laser beam to scan an object;  
a connector having at least one input terminal connectable to an external device for receiving a control signal;

a laser source controller that controls a power of the laser beam emitted from said laser source in accordance with the control signal received through said input terminal; and

a detector that, prior to emission of the laser beam, examines the connection between said input terminal and the external device and disables inhibits said laser source from emitting the laser beam when a poor connection between said input terminal and the external device is detected and that permits the laser source to emit the laser beam when a good connection between said input terminal and the external device is detected.

12. (Original) The laser scanning device according to claim 11, wherein said laser source controller has an adjuster that adjusts the relation between the power of the laser beam and the control signal received.

13. (Original) The laser scanning device according to claim 11, wherein said input terminal is kept at a first voltage level when no control signal is provided thereto, and

wherein said detector disables said laser source from emitting the laser beam when said input terminal remains at the first voltage level and the control signal provided thereto has a second voltage level different from the first voltage level.

14. (Previously Presented) The laser scanning device according to claim 11, wherein said connector has more than two input terminals, each of said input terminals being kept at a first voltage level when no control signal is provided thereto, and

wherein said detector disables said laser source from emitting the laser beam when at least one of said input terminals remains at the first voltage level and the control signal provided thereto has a second voltage level different from the first voltage level.

15. (Original) The laser scanning device according to claim 14,

wherein said detector includes an abnormal condition signal generator that generates an abnormal condition signal when at least one of said input terminals remains at the first voltage level and the laser power control signal inputted thereto has the second voltage level, and a disable signal generator that outputs a disable signal to said laser source controller when said abnormal condition signal generator outputs the abnormal condition signal, and

wherein said disable signal disables said laser source from emitting the laser beam.

16. (Previously Presented) The laser scanning device according to claim 15, wherein said abnormal condition signal generator includes an NAND gate having a number of inputs that is not less than a number of said input terminals of said reference voltage generator, and

wherein said inputs of said NAND gate are connected with respective ones of said input terminals.

17. (Previously Presented) The laser scanning device according to claim 15, wherein said abnormal condition signal generator includes a plurality of open collector inverters,

wherein inputs of said open collector inverters are connected with respective ones of said input terminals, and

wherein outputs of said open collector inverters are connected with each other to form a single output.

18. (Original) The laser scanning device according to claim 15, wherein said laser driver controller is a flip flop that changes a state of an output thereof to generate the laser driver disable signal.

19. (Currently Amended) A laser scanning device, comprising:

a laser source that emits a laser beam to scan an object;  
an input terminal connectable to an external device for receiving a control signal;  
a laser source controller that controls a power of the laser beam emitted from said laser source in accordance with the control signal received through said input terminal, said laser source controller having an adjuster that adjusts a relation between the power of the laser beam and the control signal received; and

a detector that, prior to emission of the laser beam, examines the connection between said input terminal and the external device and disables inhibits said adjuster from operating when a poor connection between said input terminal and the external device is detected and that permits the adjuster to operate when a good connection between said input terminal and said external device is detected.

20. (Original) The laser scanning device according to claim 19,  
wherein said input terminal is kept at a first voltage level when no control signal is provided thereto, and

wherein said detector disables said adjuster from operating when said input terminal remains at the first voltage level and the control signal provided thereto has a second voltage level different from the first voltage level.